CDH Comments of January 22, 1986 on the Trial Burn Plan Submittal of October 22

## Design Comments:

The following factors affect the ability of the incinerator to achieve the regulatory destruction/removal efficiency. The trial burn plan does not investigate these factors to the extent necessary to demonstrate the allowable flexibility during the operation of the incinerator under a permit. These factors must be varied in the trial burn to demonstrate their operating ranges or their ranges will be restricted in a permit. Alternatively, it may be possible for the applicant to supply information which clearly demonstrates the effect of changes in these factors.

- 1.(Thermal Capacity) The design thermal capacity of the incinerator is listed at 1.5 million BTU/hr. Feed rates for the trial burn are set at 60 lbs/hr for liquid waste tests and 150 lbs/hr for solid waste tests. How were these feed limits set? They do not appear to correspond directly to the design thermal capacity. What is the incinerator's minimum thermal feed rate?
- 2.(Turbulence) The gas flow rate to the primary reactor is maintained at 250 CFM (p.8). What is the allowable range for this rate? What rate is necessary to achieve fluidization and sufficient turbulence? How is residence time in the reactor affected by increases in the gas flow.
- 3.(Sodium Carbonate) Sodium carbonate is consumed through the formation of halogen, sulfur, and phosphorus salts and by loss through the outgas to the first reactor. How, and at what rate must the sodium carbonate be replaced? How is the replacement rate monitored?

How are the salts that are formed separated from the bed solution? How are they carried off by the off gas while the bed mixture remains behind? Does build up of these salts occur in the bed mixture?

4.(Oxidation Catalyst) At what rate must the oxidation catalyst be replaced? What chemicals must be screened for as inhibitors to the catalyst? The catalyst percentage can range from 10%-80%; at what level will the catalyst percentage be set for the trial burn?

## Control and Monitoring:

5.(Afterburner Control) The afterburner temperature is controlled by a spray cooling system and waste feed to the primary incinerator, but it is unclear how the waste feed is changed in response to a temperature variation. In addition, does this control system prevent the possibility of a run-away response? How will these control responses be monitored during the trial burn?

To address these issues, the trial burn should identify all parameters which are to be recorded and identify those parameters which will be recorded continuously. In addition, the trial burn should identify which variable indicators are displayed at the control panel, which will be printed out on a chart, and which will be recorded on disk. This information can than be used to evaluate control/response performance.

6.(Monitoring of Feed Rate) The feed rate to the incinerator is an important variable for controlling such factors as the total loadings of halogens, ash, BTUs, etc... which are allowable. The trial burn plan should specify how both solid and liquid feed rates will be monitored, and the frequency or monitoring.

7.(Automatic Waste Feed Cutoff) The automatic waste feed cutoff system should be tested during the trial burn for each of the cutoff parameters. These tests should be included in the overall schedule.

All cutoff parameters should be connected to both the solid waste feed and the liquid waste feed. This action is unclear in the plan.

The following variables should be added as automatic waste feed cutoff variables:

-Primary Bed Reactor Temperature (Both high and low set points)
-Combustion Gas Velocity(The combustion gas velocity should be
measured more directly though a mass flow rate monitoring device
instead of indirectly through the measurement of oxygen concentration.

- 8.(Manual Verse Automatic Control) The trial burn states that the incinerator control system is a combination of both manual and automatic control. Some variables may be controlled by either mechanism. The automatic waste feed cutoff system should generally not be overridden by manual control. A description of how access to manual override of the automatic waste feed cutoff system is restricted and controlled, should be provided.
- 9.(Sampling Locations) Some amount of dilution is introduced into the out gas flow system upstream of the sampling points through the canyon air inputs. The amount of dilution should be accurately monitored and accounted for in emission calculations. This procedure should be described in the trial burn plan along with the specific information on the flow rate monitoring equipment.
- 10.(CO Monitoring) CO monitoring occurs after the catalytic reactor. Consequently, CO upsets in the primary and secondary reactors could be buffered by the catalytic reactor. In other words, placing the CO monitoring equipment after the catalytic reactor results in a less sensitive monitoring of CO changes from upset in the primary and secondary reactors. The trial burn should investigate if the difference in the location of monitoring is significant. The sensitivity of the CO monitor in its proposed location, and any operating variable changes on the catalytic reator, should be evaluated.

## Additional Comments:

11. (Design Feed Limitations) Limitations on the feed systems with reguards to such parameters as viscosity, particle size, etc... should be described.

- 12.(Uranium Analysis) The trial burn plan proposes uranium as one of the constituents of the solid waste feed. Uranium is selected as a relatively safe means of demonstrating how the incinerator and associated stack gas cleaning system can remove radioactive constituents. However, the trial burn plan should describe how exactly the trial burn will make this demonstration. The trial burn should include:
  - an estimation of the expected radioactive emission concentrations an explaination of how the test burn information for uranium removal will be used to demonstrate the systems ability to remove other radioative particulates.
  - -an estimation of the maximum radioactive constituent conentrations to be accepted at the incinerator during on going operations -a description of testing and monitoring which has been conducted at the site, or elsewhere, which demonstrates the effectiveness of the air pollution control system on removing radioactive constituents
- 13.(Identification of PICs)The trial burn plan should clearly specify which products of incomplete combustion (PICs) will be analyzed for during the trial burn. The plan implies that dioxins, furans, dibenzodioxins, and dibenzofurans, will be analyze for as possible PICs. We commend the decision of analyzing samples for these constituents; we are simply requesting that these be clearly identified.
- 14.(Air Pollution Control Permit) The proposed trial burn and future operation of the incinerator may require modification to the existing Air Pollution Control Permit. DOE/Rockwell should contact the Air Pollution Control Division of CDH to determine whether any modification is necessary. (Contact John Plog x. 331-8500)